

REMARKS

This Amendment, submitted in response to the Office Action dated April 6, 2004, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

As an initial matter, the Examiner has objected to the drawings for containing certain informalities. Applicant has provided new annotated marked-up drawings together with replacement drawings to obviate the rejection.

Turning to the merits of the Office Action, claims 31, 34 and 59 remain pending. Claims 31 and 34 have been rejected under 35 U.S.C. § 103 as being unpatentable over Karellas (U.S.P. 5,864,146) in view of Itoh et al. (U.S.P. 4,597,012, hereafter "Itoh"). Claim 59 has been rejected under 35 U.S.C. § 103 as being unpatentable over Karellas in view of Itoh and further in view of Takahashi et al. (U.S.P. 5,059,794, hereafter "Takahashi"). Applicant submits the following arguments in traversal of the prior art rejections.

Applicant's invention relates to a method and apparatus for reading out image data from a stimuable phosphor sheet. In an embodiment of the invention, a plurality of line electrodes disposed on each side of a photoconductive layer become activated during scanning of the stimuable phosphor sheet using a stimulating source to improve the quality, such as signal to noise, during image reading. Referring to Fig. 23, for example, stimulated emission L4 travels obliquely and upward. By activating the line electrodes in a scanning fashion, the signals obtained from adjacently disposed electrodes can be added to improve the signal acquisition,

while distributing the output capacity of the image sensor to reduce dark current. The segmented electrodes also facilitates control of the reading.

Turning to the cited references, Karellas relates to an image reading apparatus using a stimutable phosphor and an area-wide detector CCD array in preference to a scanning system. Col. 7, lines 33-36. Karellas teaches taking an x-ray exposure of the object onto a photostimulable phosphor. The x-ray storage element is exposed to a stimulating light source over its entire area, and then the generated charge carriers are read out. The recording and reading step are separately performed. Col. 36, lines 47-48. Stated advantages of using such a system include reduction in the reading time (col. 7, lines 36-39) and increased use of light in comparison with a scanning approach. Col 36, lines 43-53.

Itoh relates to a photodetector for a fax or copy machine. Referring to Fig. 2, Itoh teaches a photoconductive layer 4 having gate electrodes 4 disposed therein. A set of line electrodes 2 are disposed below the gate electrodes, and a set of line electrodes 5 are disposed over the photoconductive layer 3. The gate electrodes are common to a group of line electrodes 2 and line electrodes 5 to activate the pixilated electrodes in a block of K x L electrodes having a number of line electrodes 5 and line electrodes 2, for example.

Takahashi relates generally to an image radiation sensor.

The Examiner maintains that the combination of Karellas and Itoh teaches or suggests each feature of claim 31. The Examiner correctly concedes that Karellas does not teach an image sensor including a pair of electrode layers on opposite sides of a photoconductive material as line electrodes, and exposure to recording light or stimulating light while applying an electric

field. The Examiner cites Itoh to make up for these deficiencies. Applicant argues that the rejection is not supported for at least the following four reasons.

First, the Itoh reference has no pertinence to the present invention. The present invention relates to a method and apparatus for reading images recorded on stimuable phosphors. By contrast, Itoh is directed to facsimile and copy machines. The considerations of stimuable phosphor materials, generation of dark currents during x-ray radiation and problems attendant therein are not addressed by the business machines of Itoh.

Second, the Examiner has failed to offer a supportable reason for combining Itoh and Karellas. The Examiner's proffered reason amounts to the rationale that the features are obvious to combine merely because the elements are individually known in the art. However, this is not an adequate basis for combination. At a minimum, the Examiner cites no benefits of using the electrode arrangement in Itoh in the device of Karellas, and thus there is no stated motivation to combine.

Third, the pertinent disclosures of the references teach away from their combination with each other. The gated electrode read out structure in Itoh would be completely inappropriate for the stimuable phosphor reading device of Karellas. In particular, in reading out the signals from the CCD array of Karellas, the application of an electric voltage in the photoconductive layer as described in Itoh would result in extraneous electron and hole migrations to the CCD storage components, thereby corrupting the true image signals stored in the CCD array. The combination would, in effect, lead to a completely inoperable apparatus. Such combinations are not supportable.

Fourth, assuming *arguendo*, that the references may be combined, their combination does not teach each feature of claim 31. Claim 31 describes projecting a recording light onto the stimuable phosphor sheet while applying an electric field to the photoconductive material layer. Since Itoh does not teach recording to a phosphor sheet at all, it cannot teach application of the electric field during recording light exposure to such a sheet. To the extent that Itoh teaches application of an electric field, it is to activate read out of an image from a sensor. Because Karellas specifically separates the recording and read-out, the combination cannot teach application of the electric field during the time interval as claimed.

Claim 31 is patentable for at least the reasons set forth above. The reasons set forth above are also pertinent to rebutting the rejection of claim 34.

Claim 59 is patentable based on its dependency on claim 31, and Takahashi does not make up for the deficiencies of the primary combination.

Applicant has added claims 60-64 to describe features of the invention more particularly.

In view of the above, Applicant submits that claims 31, 34 and 59-64 are in condition for allowance. Therefore it is respectfully requested that the subject application be passed to issue at the earliest possible time. The Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 10/714,850

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

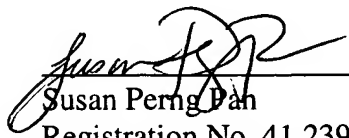
Respectfully submitted,

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WASHINGTON OFFICE

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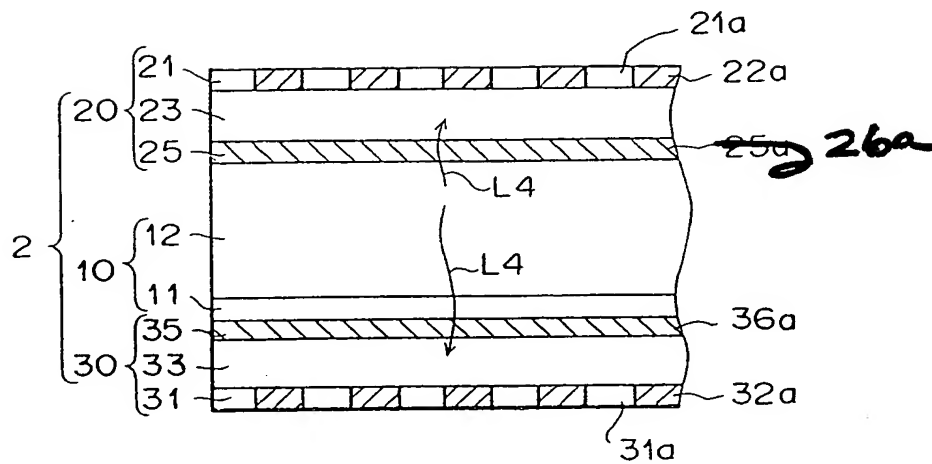
CUSTOMER NUMBER


Susan Perng Pan
Registration No. 41,239

Date: August 6, 2004

[illegible]

F I G . 6



F I G . 7

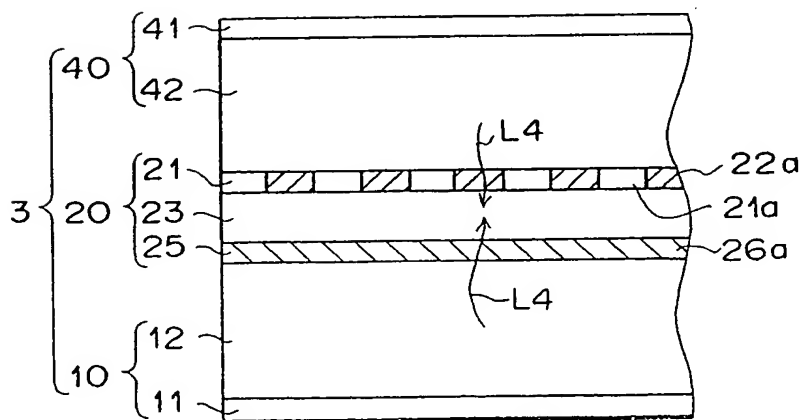


FIG. 8A

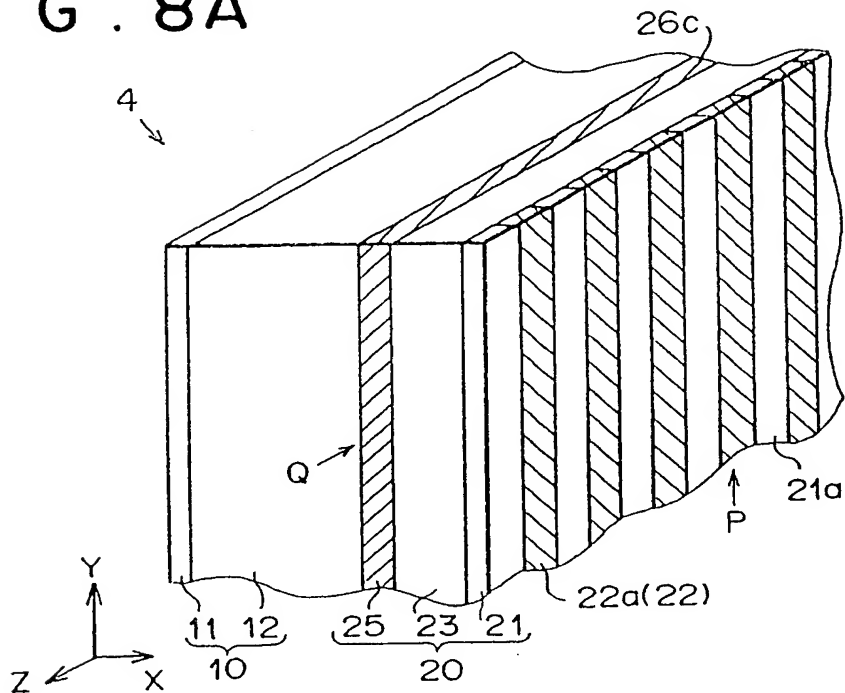


FIG. 8B

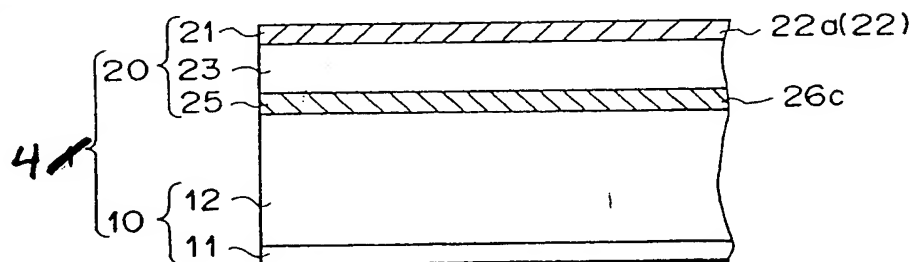


FIG. 8C

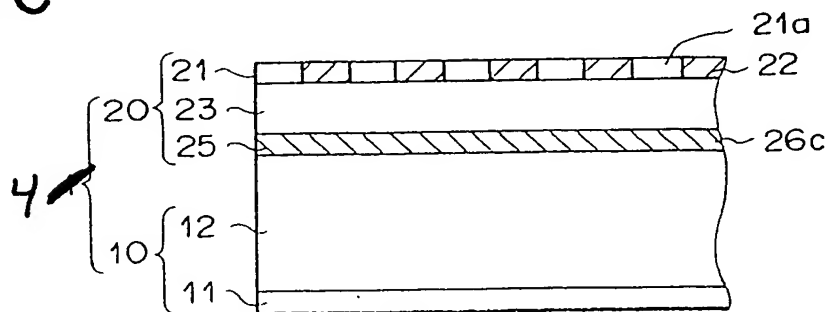


FIG. 9A

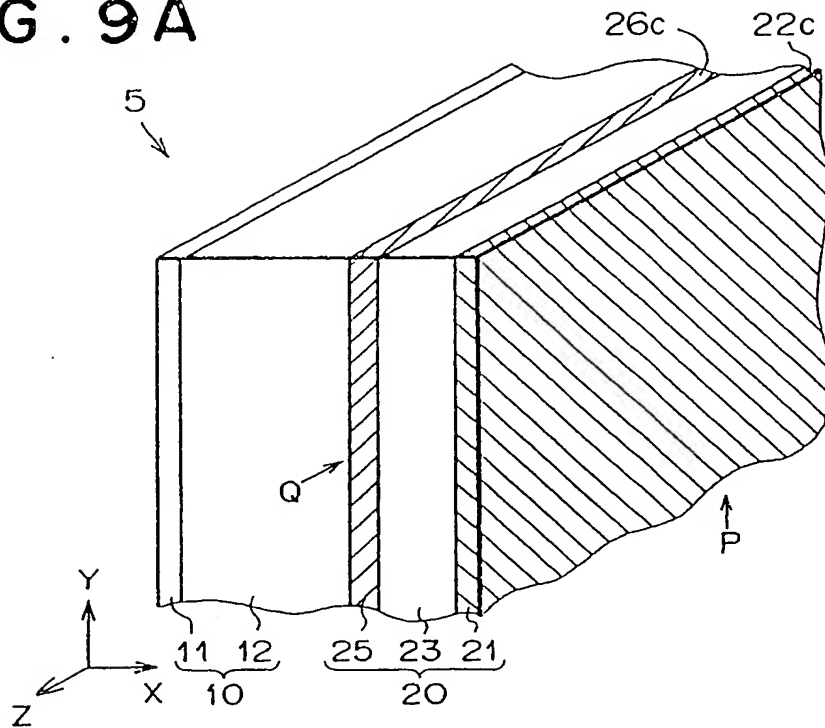


FIG. 9B

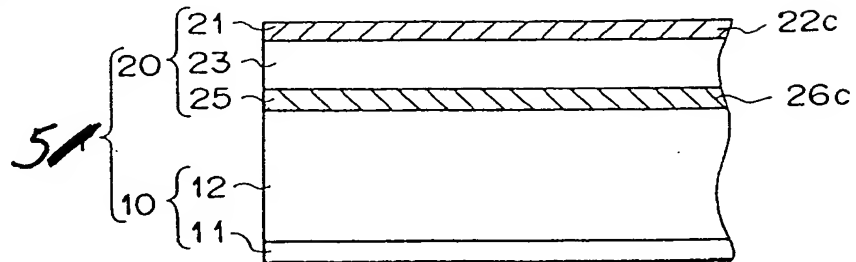
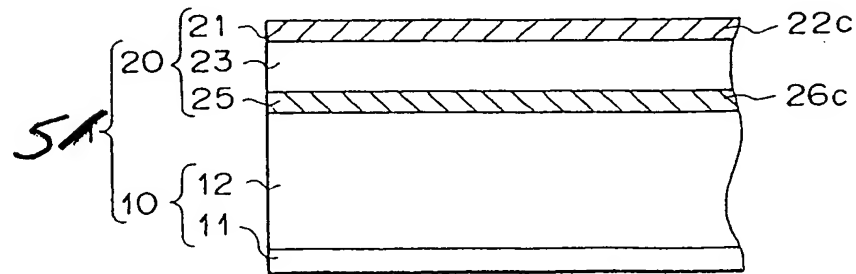
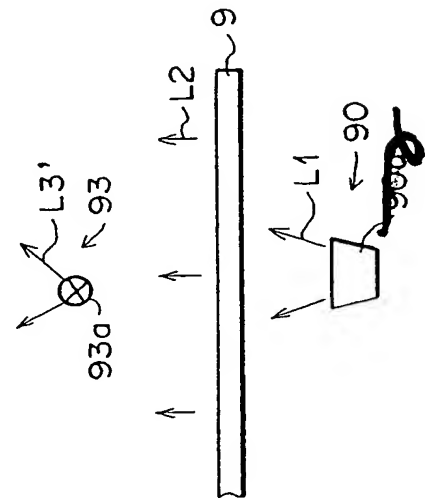
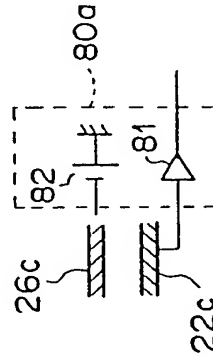


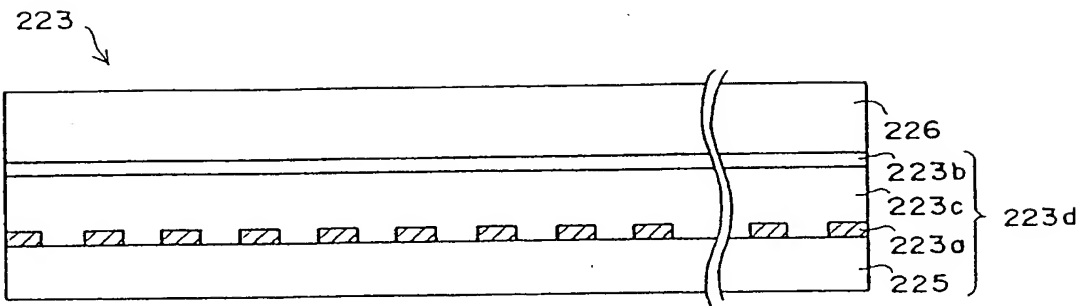
FIG. 9C





F I G . 10

F I G . 17A



F I G . 17B

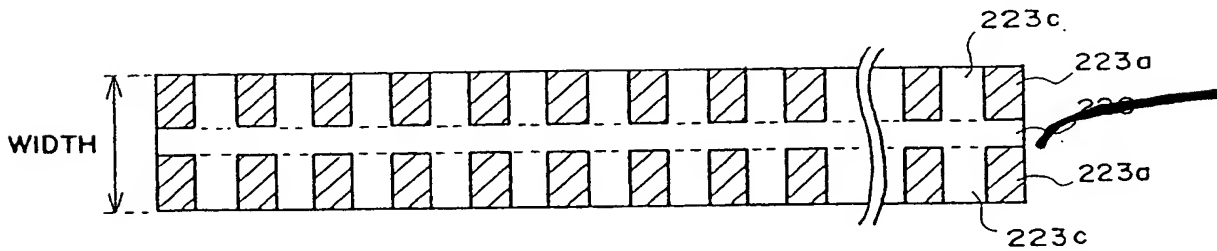


FIG. 18A

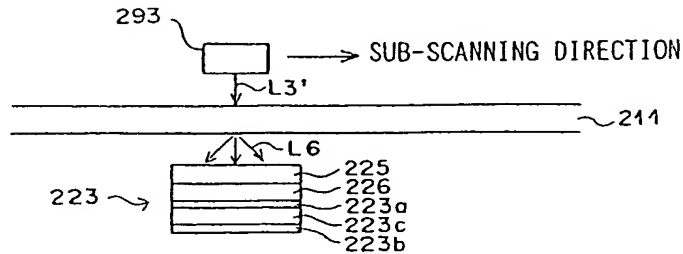


FIG. 18B

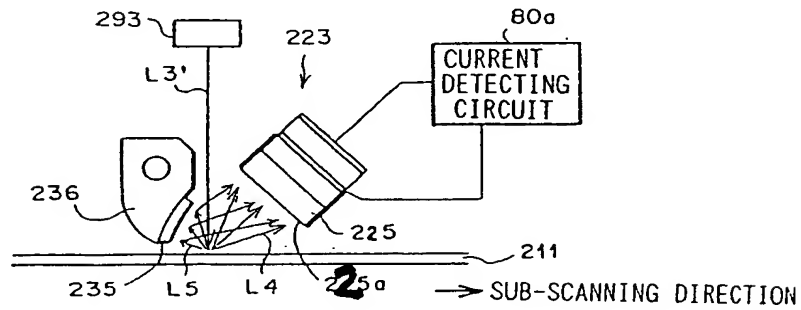


FIG. 18C

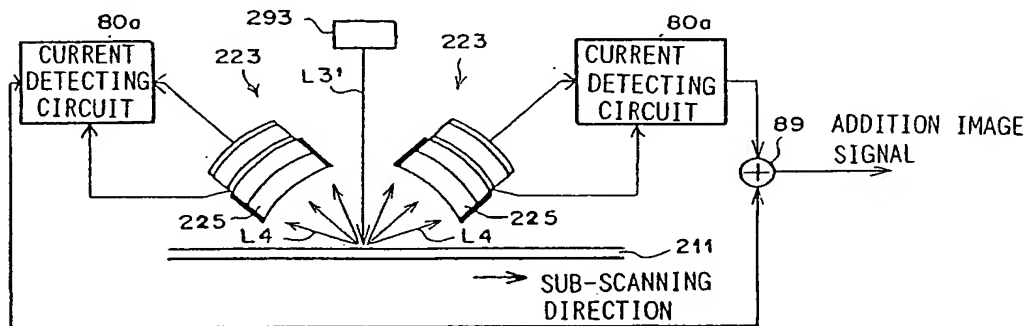


FIG. 18D

